

In re Application of: Eran FINE
Serial No.: 10/538,173
Filed: August 7, 2006
Office Action Mailing Date: July 25, 2008

Examiner: Omar R. Rojas
Group Art Unit: 2874
Attorney Docket: 30063

REMARKS

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 90-111, 114-120 and 123 are in this Application. Claims 90-111, 114-120 and 123 have been rejected. Claims 1-89, 97-100, 102, 112, 113, 121, 122 and 124-126 have been cancelled. Claims 90 and 123 have been amended. New claims 127-130 have been added.

Opening Note

It appears that the primary base of rejection is the combination of Franklin *et al.* and Grewell *et al.*

The MPEP describes several types of evidences to be considered for rebuttal of obviousness.

MPEP §2145 states that:

"rebuttal evidence may include a showing that the prior art fails to disclose or render obvious a method for making the compound, which would preclude a conclusion of obviousness of the compound".

MPEP §2145 (X)(D)(2) states that:

"It is improper to combine references where the references teach away from their combination".

Applicants will provide showing to rebut the alleged obviousness. In particular, Applicants will show that Franklin *et al.* and Grewell *et al.* fail to disclose or render obvious a method for making the claimed waveguide, and that this failure precludes a conclusion of obviousness of the waveguide. Applicants will further show that the references teach away from their combination.

35 U.S.C. § 103 Rejections

The Examiner rejects claims 90-105, 107-111, 114-120 and 123 under 35 U.S.C. § 103(a) as being unpatentable over Franklin *et al.* in view of Grewell *et al.*

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The Examiner states that Franklin *et al.* discloses a light guide having a plurality of diffuser particles distributed in an increasing concentration such that a portion of the light is scattered by the particles and emitted through a side surface of the light guide to inherently provide a light gradient emanating from said side surface. The Examiner acknowledges that Franklin does not disclose a light guide which is flexible and shaped as a sheet. In this respect, the Examiner cites Grewell *et al.* stating that Grewell *et al.* discloses a flexible light guide that is made of a flexible sheet of rubber, silicone rubber, or thermoplastic. The Examiner holds that the light guide of Franklin *et al.* could have also been fabricated from the sheet material(s) of Grewell *et al.* in order to provide Franklin's light guide with additional flexibility, and concludes that it would have been obvious to one of ordinary skill at the time of the claimed invention to obtain the invention specified by claims 90, 94, 95, 102, 103, 108-110 and 123 in view of Franklin *et al.* combined with Grewell *et al.*

The Examiner rejection is respectfully traversed. Applicants submit that the ordinarily skilled person would not be motivated, or be able, to combine Franklin *et al.* with Grewell *et al.* Applicants further submit that Grewell *et al.* does provide what Franklin *et al.* lacks.

The following relates primarily to the independent claims, the dependent claims are patentable at least by virtue of their dependency on their parent claims. Applicants submit that at least some of the dependent claims add patentable subject matter.

Franklin *et al.* disclose a side scattering light guide which includes a transparent polymer core and a transparent or translucent polymer cladding surrounding the core. The core includes light diffuser particles arranged to scatter light within the core so that at least some of the light passes through the cladding to be emitted from the light guide. Franklin *et al.* explicitly teach that the core is cylindrical (see, *e.g.*, paragraph 43) and that the cladding is tubular (see, *e.g.*, paragraph 42).

Franklin *et al.* are also explicit regarding the production method of their light guide (see paragraphs 56 onwards, claim 26 and also Australian Patent No. 736582

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which is repeatedly cited throughout Franklin's disclosure). According to the teachings of Franklin *et al.*, diffuser particles are added to a monomeric mixture which is then introduced into a low refractive index polymer tube to form the light guide's core. The polymer tube thus becomes a cladding surrounding the core. It is emphasized that this is the only technique taught by Franklin *et al.* to provide a light guide with varying concentration of diffuser particles. The whole tenor of Franklin *et al.* is directed to this technique and they are silent with respect to (and do not contemplate) any other technique.

An essential feature in Franklin's process is the filling of a cladding tube by the core material. However, as will be appreciated by the Examiner, it is not possible to manufacture a waveguide sheet by employing this technique, since a sheet does not have a cladding tube. The skilled person would therefore not be able to devise a waveguide sheet based on Franklin's disclosure.

Grewell *et al.* disclose a technique for directing a laser beam to a weld zone for infrared/laser welding. Grewell *et al.* transmit the laser energy through a transparent flexible sheet of material referred to by Grewell *et al.* as a light guide. Although Grewell's light guide is shaped as a sheet, it serves as a transmission line of laser energy from the laser source to the welding zone, which transmission line does not allow any emission of light during propagation. It is noted that since Grewell *et al.* are directed to laser welding, any loss of laser energy during propagation is highly undesirable. For example, in column 3 line 19 Grewell *et al.* teach that the laser diode produces a line of radiation that is retained within the light guide between an entrance surface and an exit surface due to the 100 % internal reflection of the light guide. The undersigned notes that the term "surface" in Grewell's disclosure should be identified as the end of the sheet, as illustrated in Grewell's drawings (reference signs 22 and 24).

Thus, contrary to the claims, Grewell *et al.* teach an end-to-end light guide.

Moreover, Grewell *et al.* explicitly teach that any diffusion has to be minimized on entry and exit of laser light into and out of the light guide. Thus, Grewell *et al.* teach away from emission by diffusion which is the only emission

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mode of Franklin's light guide. Reading through Grewell's disclosure, the skilled person would not be motivated to combine Grewell *et al.* with Franklin *et al.*, since he would recognize that they have conflicting operation modes (MPEP §2145 (X)(D)(2) "*the references teach away from their combination*").

Additionally, since Franklin *et al.*, as stated, is only suitable for cylindrical core and tubular cladding, and since Grewell *et al.* do not teach diffuser particles in the core, there is lack of factual information for performing the combination, namely to incorporate diffuser Franklin's particles in Grewell's sheet. The ordinarily skilled person would therefore not be able to arrive at the claimed invention by combining the teachings of Grewell *et al.* with Franklin *et al.* In this respect, the Examiner's contention (pages 4-5, bridging paragraph of the instant Action) that the light guide of Franklin *et al.* could have been fabricated from the sheet material of Grewell *et al.* appears to be incorrect (MPEP §2145 "*the prior art fails to disclose or render obvious a method for making the compound, which would preclude a conclusion of obviousness of the compound*").

It is therefore submitted that neither Franklin *et al.* nor Grewell *et al.* renders the independent claims obvious either singly or in combination, since (i) both Franklin *et al.* and Grewell *et al.* lack at least one limitation of the claims (Franklin *et al.* lack, *e.g.*, waveguide sheet, Grewell *et al.* lack, *e.g.*, emission through the surface of the sheet); (ii) Grewell *et al.* explicitly teach away from Franklin *et al.* hence from any combination therebetween; and (iii) there is lack of factual information how to do the combination.

In re claim 111, the Examiner acknowledges that Franklin in view of Grewell differs from this claim in that Franklin does not expressly teach also including the diffuser particles within the claimed third layer. The examiner, however, holds that providing an additional cladding or third layer to Franklin's device would have been obvious to obtain better confinement of light within the core layer. The Examiner further holds that it would have been obvious to include at least some of Franklin's diffuser particles within this third layer for the purpose of obtaining more control over, or an increase in, the amount of scattered light.

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Applicants respectfully disagree. It is not obvious to include Franklin's diffuser particles in the third layer, since Franklin *et al.* only teach how to incorporate the diffuser particles in the core. It is noted that this is not simply a matter of semantics. Franklin *et al.* use a pre-prepared cladding tube and fills it with a monomeric mixture and diffuser particles. Since the cladding tube already exists before the process begins, the diffuser particles occupy the core but not the cladding. The ordinarily skilled person would therefore have to exercise inventive skill to add the diffuser particles to the cladding, since he would have to devise a production procedure which is completely different from Franklin's teachings, taken alone or in combination with Grewell *et al.*

In re claims 114-120 the Examiner states that the proposed combination of Franklin and Grewell has all the structural limitations required by these claims. It is noted that claims 114-118 include the limitation of at least one diffractive optical element and that claims 119-120 include the limitation of at least one region of high refractive index in the first or third layer. None of these limitations is even hinted in Franklin and Grewell. The undersigned notes that in the present case it appears to be inappropriate to indicate a rejection without setting forth a reference to the relevant column and line numbers, MPEP §706.02(j)(A).

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Claim Amendments

Claims 90 and 123 have been amended to include the limitation that light is emitted through one surface of the sheet while another surface remains opaque. This limitation finds support in page 17 lines 3-8 of the specification. It is submitted that claims 90 and 123 are patentable over Franklin *et al.* since Franklin *et al.* is directed to a tubular cladding hence cannot provide a waveguide sheet in which the light is emitted through one surface of the sheet while another surface remains opaque. It is further submitted that claims 90 and 123 are patentable over Grewell *et al.* since Grewell *et al.* only teaches emission through the ends of the light guide

New claim 127 depends from claim 90 and includes the limitation that a size of the particles is selected so as to selectively scatter a predetermined range of wavelengths of the light. This limitation finds support in page 15 lines 32-33 of the specification. It is submitted that claim 127 is patentable at least because none of Franklin *et al.* and Grewell *et al.* discloses that the particles selectively scatter a predetermined range of wavelengths of the light. It is noted that Franklin *et al.* teach that the size of the diffuser particles is between about 10 nm and about 200 μm , or between about 5 μm and about 50 μm (see paragraph 28), but Franklin *et al.* is silent with respect to any wavelength selectivity.

New claim 128 depends from claim 90 and includes the limitation that the particles are selected for filtering out particular wavelengths of the light. This limitation finds support in page 16 lines 4-5 of the specification. It is submitted that claim 128 is patentable at least because none of Franklin *et al.* and Grewell *et al.* discloses that the particles are used for filtering out particular wavelengths of the light.

New claim 129 depends from claim 103 and includes the limitation that that the particles are distributed in the first and second layers. This limitation find support in page 14 lines 25-29 of the application as filed. It is submitted that claim 129 is patentable at least because none of Franklin *et al.* and Grewell *et al.* discloses a first layer and a second layer wherein the particles are distributed in the first and second layer.

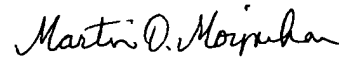
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New claim 130 is an independent claim which includes all the limitations of previously presented claim 90. It is submitted that none of Franklin *et al.* and Grewell *et al.* renders claim 130 obvious since none of Franklin *et al.* and Grewell *et al.* teaches a waveguide sheet that emits light through the surface. The arguments above regarding the fact that (i) Franklin *et al.* and Grewell *et al.* are uncombinable and (ii) the lack of factual information to do the combination, are incorporated by reference with respect to new claim 130.

In view of the above amendments and remarks it is respectfully submitted that the claims are now in condition for allowance. A prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,



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Date: November 25, 2008

Enclosures:

- Petition for Extension (One Month);
- Request for Continued Examination (RCE).